nswer Key
Assignment 2
Commerce 295 – Managerial Economics

1**.** Thanks for agreeing to help out with marking for Comm 295.

2. Please follow the marking guide closely. You will still have judgement calls to make. Just do your best.

3. If you have questions please contact the instructor you are working with by email. If you are concerned about answers being wrong or about changing the proposed marking pattern please send email to your instructor and to Jim Brander at james.brander@sauder.ubc.ca.

4. Please use red pen for marking.

5. Please do not make comments on the assignments. It is too time-consuming and short comments are often confusing to students. Students will get detailed answers so they can see what went wrong. For each part of each question just put number of points in red somewhere appropriate. Question totals should be placed in the designated spots on the first page of the assignment.

6. Please do not use half points. Each part of each question get be a whole number of points, such 4 or 5.

7. Students are allowed write answers by hand. However, answers must be provided neatly in the provided space. You do not need to mark and should not give credit for answers outside the allowable space. If the answers are too messy or very hard to read points can be deducted. If you feel the assignment make a not on the front of the form "too messy?" The instructor can review it and deduct marks as appropriate.

We asked students to the assignment in pen, but we will not deduct marks for pencil answers.

8. Sometimes students will get an early calculation wrong, then carry through that wrong answer and therefore get a wrong answer to a later part of the question, even if they use the correct method. They will lose points for the initial wrong answer but we should try to give full credit for subsequent answers that use the correct method. However, sometimes an initial wrong answer makes it impossible to do use the correct method or correct logic afterward. In this case students would lose additional marks

9. Pen to paper rule. For any part of any question students should get at least 1 pt for any attempt. Thus, if students attempt both parts of a 2-part question, they would get at least 2 pts. On the other hand, we can be fairly tough about giving full marks for tough questions. All questions are out of 10. We expect most marks to be between 6 and 9 out of 10. Still, do not hesitate to give 10/10 if students really have the correct answer.

10. If the title page (with spaces to put marks) is missing there is a 2 point penalty.

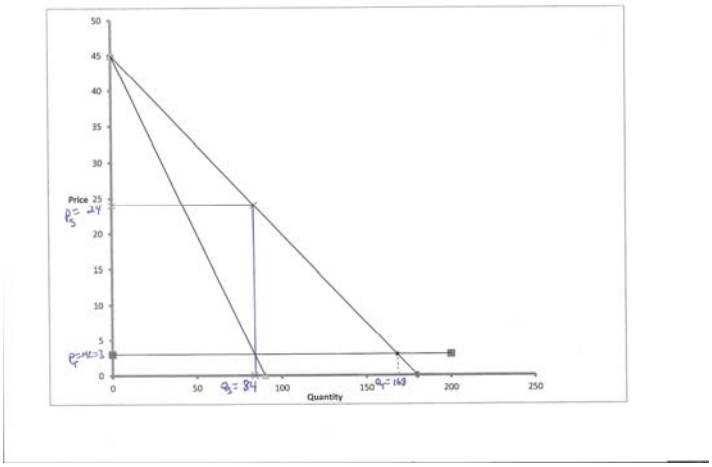
11. In the following marking guide the format is not completely consistent, but everything should be fairly clear.

Each question is worth 10 pts. Show your working.

1. **(Two-Part Pricing)** Super Duper Games (SDG) has a monopoly on a new interactive roll playing game. All customers of SDG are identical. SDG managers are deciding on appropriate pricing methods to maximize profit.

It has been estimated that an individual player's demand can be represented by p = 45-0.25Q where Q is hours spent playing the game. The firm has estimated its marginal cost to be $3 per hour and has no fixed costs.

a) (6 pts) Super Duper is deciding between charging a single price per hour or charging a membership fee and then a per hour usage fee (a two part price). Illustrate the comparison in a diagram. In a table below show the output, price, consumer surplus, and profit per consumer for these two pricing methods.



	P	Q	CS	PS
Single price	24	84	882	1764
Two-part Pricing	3 usage 3528 membership	168	0	3528

Marking
1 mark for price and quantity for single price
1 mark for price and quantity for two-part (membership fee not required)
1 mark for CS and PS for single price
1 mark for CS and PS for two-part price
1 mark for appropriate monopoly diagram (showing MR, MC and Demand)
1 mark for showing prices and quantities of single and two-part price in the diagram
1 optional mark if they missed something earlier but appropriately showed CS and PS in the diagram and had correctly labeled axis (cannot get over 6 in this part of the question)

b) (4 pts) Now assume there are two customer types with different demand curves. Assume also that SDG uses two-part pricing and that all consumers face the same access fee and per hour fee. What happens to the profit-maximizing per hour fee and to consumer surplus compared to two-part pricing in part a? (Hint: Consider as one possibility that one consumer type has relatively low demand and does not purchase the product.) Briefly explain your reasoning. No diagram is needed.

If both customer types are served then P>MC (usage fee price rises) (1 pt). In this case consumer surplus is positive and is therefore higher than with only one consumer type. (1 pt).
It is possible that the firm will serve only one consumer type. If so the firm will charge P = MC (1 pt) and consumer surplus will be 0. (1 pt).

2. **(Bundling)** DollsRUs is selling two new dolls to coincide with the release of the upcoming feature film: *Jack and Jill Fetch Water*. The firm has done extensive market research and has determined that there are five types of customers that will demand dolls. Their willingness to pay for each doll can be summarized in the following table:

	Jack	Jill
A	3	7
B	4.50	6.50
C	5.50	5.50
D	6.50	4.50
E	7	3

The marginal cost to produce Jack is $3 and the marginal cost to produce Jill is $4

a) (5 pts) What is the maximum profit the firm could earn under stand-alone pricing, pure bundling, and mixed bundling? Show your calculations and explain briefly.

Individual pricing:
$P_{JACK}=\$5.50$ $P_{JIll}=\$6.50$ (1 pt)
*Profit=3*5.50+2*6.50-3*3-2*4=$12.50* (1 pt)

Pure bundlig
profit max at $P_{bundle}=\$10$
*Profit=5*10-5*7 =$15* (1 pt)

Mixed bundling:
profit max at $P_{JACK}=\$7$ $P_{JILL}=\$7$ $P_{Bundle}=\$11$ (1 pt)

*Profit=3*11+1*7+1*7-4*3-4*4=$19* (1 pt)

Marking:

1 mark individual prices and 1 mark individual profit

1 mark bundle price and profit

1 mark mixed bundle prices and 1 mark mixed bundle profit

b) (5 pts) DollsRUs has found that they can outsource the production of Jack and Jill such that the marginal cost of both dolls would drop to $1 per doll. How would this change your answer to part a? Explain showing your calculations.

Individual pricing:

$P_{JACK}=\$4.50$ $P_{JILL}=\$4.50$ (1 pt)

*Profit=4*4.50+4*4.50-8*1=$28* (1 pt)

Pure bundling:

$P_{BUNDLE}=\$10$

*Profit=5*10-10*1=$40* (1 pt)

Mixed bundling:

$P_{BUNDLE}=\$10$ (1pt)

Prices for Jack and Jill can be anything big enough so consumers do not buy stand- alone items.

*Profit=5*10-10*1=$40* (1 pt)

Marking

2 marks for individual prices and profit

1 mark for bundled price and profit

1 mark for bundle price of $10 under mixed bundling (do not worry about what is said about stand alone prices.)

1 mark for profit of 40 under mixed bundling.

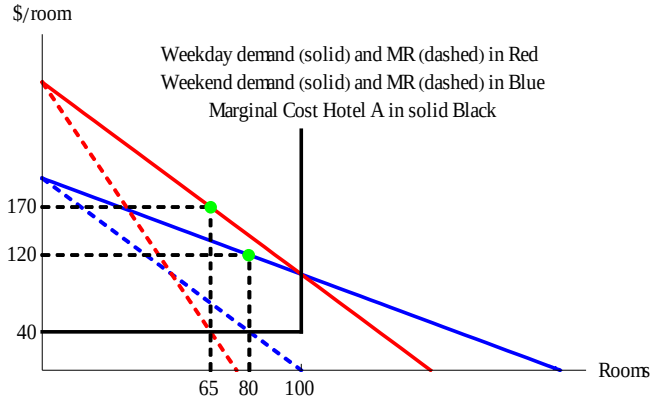
3. Peak Load Pricing

Four Star Hotels owns hotels in different cities, Hotel A and Hotel B. Each hotel is a local monopoly and has two types of customers: tourists on weekends and business travelers during the week. At each hotel demand on each weekend day is Q = 200 – p. On each weekday demand at each hotel is Q = 150 – 0.5p. The daily marginal cost of renting a room is $40 at both hotels. Each hotel can charge a different price on the weekend and during the week.

a) (5 pts) Hotel A has capacity for 100 rooms. Determine Hotel A's optimal prices and the occupancy rates during the weekend and on weekdays. Show in a diagram the weekend and weekday (inverse) demand curve, marginal revenue curve, and marginal cost for Hotel A and illustrate the solution.

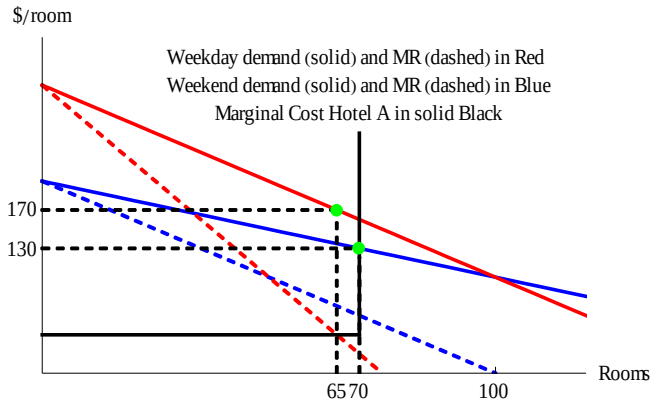
Answer:

a) Optimal price on weekends: MR= 200 - 2q=MC=40 gives Q=80 and P=$120 (room rate on weekends) [1 point]
Optimal price on weekdays: MR= 300-4q=MC gives Q=65 and P=$170 [1 point]
Diagram: [3 points]



b) Hotel B is a boutique hotel with capacity for only 70 visitors. Determine the optimal prices and the occupancy rate on weekend and weekdays. Show in a diagram the weekend and weekdays inverse demands, marginal revenues, and marginal cost for Hotel B and illustrate the solution.

Optimal price on weekends: The hotel reaches capacity as MR cuts the vertical part of the MC curve, so Q = 70. The price is P = 200-Q=$130 [2 points]
Optimal price on weekdays: MR=MC gives Q=65 and P=$170 [1 point]
The diagram illustrates the two outcomes [2 points]:



Cournot/Stackelberg and Bertrand

The inverse demand for a homogeneous-product duopoly is P=20000-5Q. Both firms (firm 1 and firm2) share the same cost structure: C(Q)=3000Q. Firms can produce any nonnegative level of output.

a) (7 points) Determine the Cournot equilibrium output. That is, show the equilibrium quantities produced by each firm, the equilibrium price and firms' profits. Now assume that firm 1 is a first mover and firm 2 a follower. Calculate the Stackelberg equilibrium.
b) (3 points) Assume now that the two firms compete by setting prices. What is the Bertrand equilibrium outcome (total output, price and profits for each firm).

a) COURNOT: Firm 1 maximizes profits $\pi = (20{,}000 - 5q_1 - 5q_2)q_1 - 3{,}000q_1$ choosing q_1.

Obtain the best response function by setting MR = MC to obtain $20{,}000 - 10q_1 - 5q_2 = 3{,}000$ so $q_1 = \frac{3{,}400 - q_2}{2}$ [1 point]

Firm 2 faces a similar problem to firm 1. By symmetry, the best response for firm 2 is $q_2 = \frac{3{,}400 - q_1}{2}$ [1 point]

The equilibrium quantity for each firm is obtained with the two best responses (system of 2 equations with 2 unknowns): q*=1,133.33 (no penalty if numbers are rounded). [1 point]

Total quantity in the market is Q=2,266.66. Plug the quantity in the inverse demand function and the equilibrium price is P=$8,667.67. Each firm makes a profit of $6,422,222 [1 point]

STACKELBERG: Substitute firm 2's best response function in firm 1's profit function (or in the revenue function):

$$\pi = \left(20{,}000 - 5q_1 - 5\left(\frac{3{,}400 - q_1}{2}\right)\right)q_1 - 3{,}000q_1 = \frac{5}{2}q_1(3{,}400 - q_1)$$

[1 point]

Maximize firm 1's profits $\frac{\partial \pi}{\partial q_1} = 3{,}400 - 2q_1 = 0$. Thus, $q_1 = 1{,}700$

Plug q_1 into firm 2's best response and $q_2 = \frac{3{,}400-1700}{2} = 850$. [1 point]

Total quantity is $Q = q_1 + q_2 = 2550$. The equilibrium price is $7,250.

Firm 1 makes a profit of $7,225,000 and firm 2 makes a profit of $3,612,500. [1 point]

b) The output is p=MC=$3,000 profits=0 and Q=3,400 [1 points].

This is a Nash Equilibrium because each firm is choosing its best possible strategy (its price) given the strategy (the price) chosen by the rival firm. Neither firm can do better by changing its price. [2 points]

5. **(Game Theory)** Consider the following game (where X > 0) between Asahi and Kirin in which they can choose either high price or low price.

	Kirin		
Asahi		High Price	Low Price
	High Price	120, 120	15, 70 + X
	Low Price	70 + X, 75 - X	30, 30

a) (5 pts) For what range of values of X do both firms have a (strictly) dominant strategy? Assuming that both firms do have a strictly dominant strategy, what is the (pure strategy) Nash equilibrium of this game? And is this game an example of prisoner's dilemma? Explain your reasoning.

If X > 50, then both Ashahi and Kirin always choose LP irrespective of what the other chooses. Hence both have LP as the dominant strategy (1pt). Since both have LP as a dominant strategy, (LP, LP) is the Nash equilibrium (2 pts).

With X > 50, this game is an example of Prisoner's Dilemma because both have a dominant strategy and the Nash equilibrium pay off (30, 30) is lower than the payoff they could get with cooperation (120, 120) (2 pts).

b) (5 pts) For what values of X will there be multiple Nash equilibria? What are those two Nash equilibria?

Since with X > 50, there exists a unique Nash equilibrium, no multiple Nash equilibria are not possible if X > 50. We therefore need to consider what happens if X < 50. If X is between 45 and 50 there are

two possible Nash equilibria. (2 pts). Both (High, High) and (Low,Low) are Nash equilibria. (2 pt) Provide some reasonable explanation (1 pt)

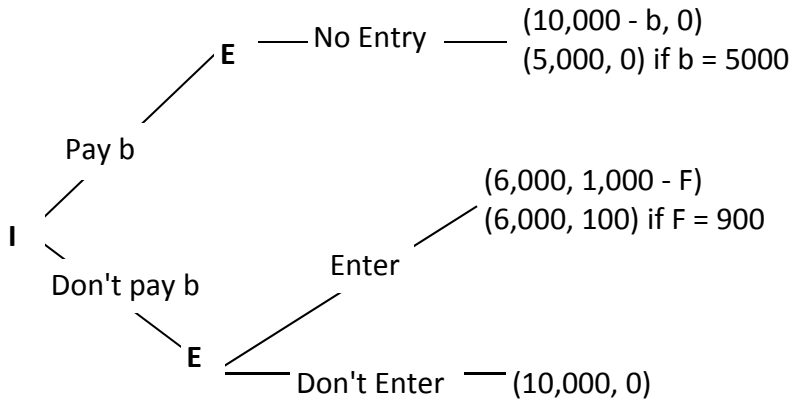
An example with X = 49:

	Kirin		
Ashahi		High Price	Low Price
	High Price	120, 120	15, 119
	Low Price	119, 26	30, 30

With this value of X = 49, if Ashahi chooses HP, Kirin chooses HP. By the same token if Kirin chooses HP, Ashahi chooses HP. So (HP, HP) is the Nash equilibrium. In a similar way, (LP, LP) is another Nash equilibrium.

6. **(Entry Deterrence)** Joe's Gas, the only gas station at a busy highway exit, earns a monopoly profit of $10,000 per week. Joe is concerned about entry. He can obtain an exclusive right that would prevent others from entering the market at this location, at a cost of $b per week. If Joe does not buy the exclusive right, a potential entry must decide whether to enter. If entry occurs Joe's profit will fall to 6000 per week and the entrant will earn 1000 – F, where F is a weekly fixed cost.

a) (4 pts) Draw an extensive form (or game tree) diagram for this game. (See Figure 13.3.) If F = 900 and b = 5000, what is the subgame perfect Nash equilibrium? (5 pts)



(Graph 1 pt)

If F = 900 and Incumbent buys no exclusive right ("Don't pay b"), the Entrant chooses "Enter". As a result, the incumbent gets $6,000 (1 pt). If the Incumbent buys exclusive right by paying b = $5,000, then the potential entrant cannot enter and the incumbent makes $5,000 (= 10,000 - 5,000) (1 pt). Since the incumbent can choose first, it will choose "Don't pay b" and hence the subgame perfect Nash equilibrium is (Don't pay b, Enter) (1 pt)

(Alternatively using **backward induction**: In the first sub-tree, the entrant does not enter and the incumbent gets $5,000. In the second sub-tree (when incumbent does not buy the right), the entrant enters (as 100 > 0) and the incumbent gets $6,000. Since the incumbent, the first mover, does better by not buying the right, the subgame perfect Nash equilibrium is (Don't pay b, Enter).)

b) (6 pts) For what combinations of b and F will the incumbent buy the exclusive right to deter entry? (Specify a range for b and a range for F.)

If F > 1,000, then the entrant will never enter. (1 pt) If F < 1,000 and b < 4,000, the incumbent by buying the exclusive right (and deterring entry) can make the monopoly profits higher than $6,000 (1 pt). Otherwise (if the incumbent does not buy the right), the potential entrant will enter and the incumbent ends up with duopoly profits equal to $6,000. Thus in this case the incumbent buys the right. (1 pt)

If F < 1,000 and b > 4,000, then the incumbent can make $6,000 by not buying the exclusive right which is higher than what it can make by buying the right. (1 pt)

Thus the incumbent will buy the exclusive right for all values of F < 1000 and b < 4,000. (2 pts)

7. **(Uncertainty)** A pension fund manager has identified 4 possible strategies that might be followed in the next year.

Strategy	Return with Bad Luck	Probability of Bad Luck	Return with Good Luck	Probability of Good Luck
A	4	0.6	9	0.4
B	5	0.3	5	0.7
C	2	0.5	12	0.5
D	4	0.8	11	0.2

a) (5 pts) Determine the expected value and standard deviation for each possible strategy. (Use a spreadsheet and copy the spreadsheet into your answer.) What can you say about which strategy would be chosen if the manager is risk neutral. Assuming the manager cares only about expected value and variance, what can you say about the choice that would be made by a risk-preferring manager or a risk-averse manager. (If you cannot say which strategy would be chosen, state if any strategies can be ruled out.)

Strategy	Return with Bad Luck	Probability of Bad Luck	Return with Good Luck	Probability of Good Luck	EV	SD
A	4	0.6	9	0.4	6	2.45
B	5	0.3	5	0.7	5	0.00
C	2	0.5	12	0.5	7	5.00
D	4	0.8	11	0.2	5.4	2.80

2 pts for correct spreadsheet. (1 pt for the EV column and 1 pt for the SD column.)

Answer: A risk neutral manager would choose strategy C (1 pt) because a risk neutral manager cares only about expected value and would therefore choose the highest expected value.

A risk-preferring manager would choose strategy C (1 pt) because a risk-preferring manager places positive value on both EV and SD and option C has the most of both.

A risk-averse manager will definitely NOT choose D (1 pt) because it is dominated by A, as A has both higher EV and lower SD than D. However, beyond that we cannot say what the manager would do.

b. (5 pts) It turns out the manager has a utility function given by $U = R^{0.5}$ where R is the return to the fund. Illustrate this utility function in a diagram over the range R = 0 to R = 16. Determine the certain return that would provide the same expected utility as Strategy C. What is the risk premium for Strategy C? Show this risk premium in your diagram.

Answer: The utility function is shown below. (1 pt) if the utility function looks roughly correct. It should start at the origin, it should be concave, and it should have value 4 at R = 16.

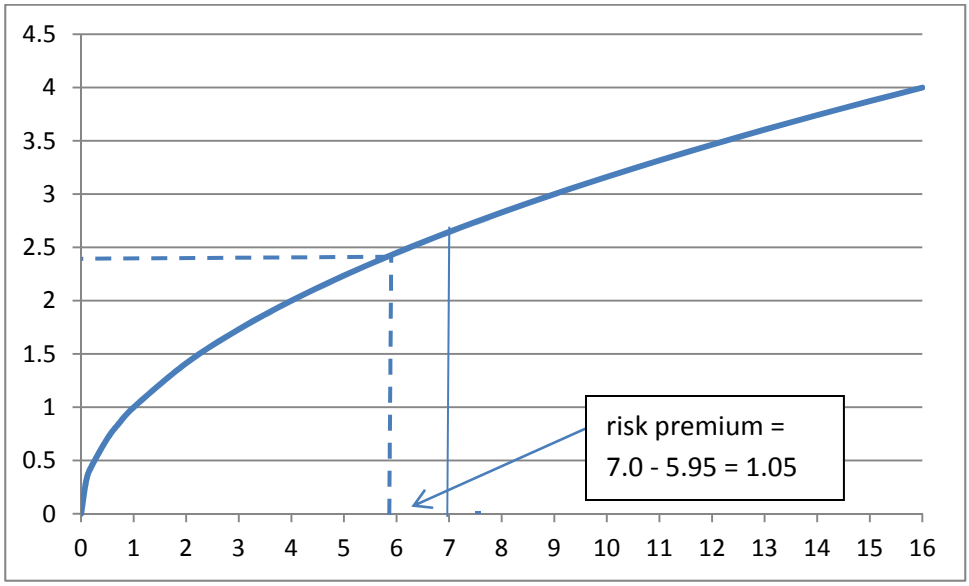
EU of option C: EU = 0.5U(2) + 0.5U(12) = 2.44. (1 pt) (rounding to 2 decimal places)

The certain return, CE, that would give this utility has the property that $\sqrt{CE} = 2.44$ or $CE = 2.44^2 = 5.95$. (1 pt)

The risk premium, RP, is the EV of option C, which is 7, minus the certainty equivalent of 5.95.

Therefore, RP = EV – CE = 7.0 – 5.95 = 1.05 (1 pt)

1 pt for showing RP in the diagram.



8. **(Behavioral Economics)**

Suppose Monica and Douglas are playing a repeated game. In each round each player may defect or cooperate. These actions are chosen simultaneously by both players in each round. The payoffs for each round are as follows. (The first number in each cell is the payoff to Monica).

		Douglas	
		Defect	Cooperate
Monica	Defect	2, 2	7,0
	Cooperate	0, 6	5, 5

a. (5 pts) Suppose there will be exactly 10 rounds and that each player is "fully rational". This information is common knowledge. What is the subgame perfect Nash equilibrium in this game? Explain your reasoning. In real experiments we often observe some periods of cooperation in the early rounds for this game. State two points from behavioral game theory that can help explain this result.

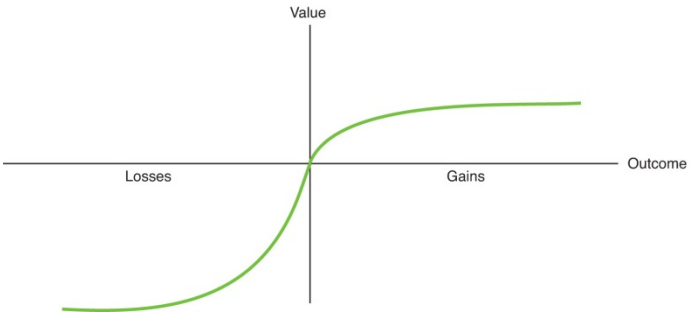
The subgame perfect Nash equilibrium in this game is for both players to defect in every round (1 pt). Each player gets a payoff of 2 in each round.

The reason is as follows: In the last round it is dominant strategy for each player to defect, so each player will defect. Players know this. Therefore, in the 2nd to last round, each player knows that both will defect in the last round and there is nothing they can do to change that. Therefore defecting in the 2nd to last round is a dominant strategy. The same thing applies to every round, so players defect in every round. The game "unravels". This method used for this reasoning backward induction – starting at the end of the game and working back toward the front. Give 1 point for any statement that contains any of these elements. Give a second point for a good statement that includes either the term "backward induction" or "unravels".

One way to explain what happens in real experiments is that players are applying the reciprocity norm – they have a strong psychological inclination to try to cooperate using a tit-for-tat type of strategy (i.e using reciprocity) even when it is not fully rational to do so. Also, in real games players do not believe that other players will necessarily think through all ten rounds of the game and apply backward induction. Each player expects the other to apply more limited levels of reasoning and might therefore be willing to try cooperation.

b. (5 pts) The prospect theory utility function shown in Figure 14.6 can be used to explain framing effects and endowment effects. Why? (Draw a relevant diagram and explain briefly in 4 sentences: State what framing

effects are, state what the endowment effect is (see p. 109 in the textbook), refer to the diagram to explain how framing effects can arise, and refer to the diagram to show how the endowment effect can arise.



The prospect theory utility function is shown above. (1 pt for a diagram that looks like this.)

Framing effects refer to the fact that people often change their decisions depending on how the choice is framed or described even when the payoffs or underlying economic fundamentals do not change. (1 pt for this basic idea.)

The endowment effect is that people often place a higher value on a good if they own it than if they are considering buying it. (1 pt for this basic idea.)

The diagram explains framing effects because it implies that people will act risk averse if they can be made to see a choice being about potential gains but will be risk-preferring if the see a choice as being about potential losses. (1 pt for this idea.)

The endowment effect is illustrated by the fact that if you own an object and are considering losing it (by selling it) you are in the domain of losses and will place a high value on the good, as shown by the utility function becoming very negative, but if you considering buying it you are in the domain of gains and the utility function does not rise very much. (1 pt for this idea.)

Question 9

(**Adverse Selection and Signaling)** Fred and Arnie each manage a used car dealership. Each dealership specializes in selling year 2008 Jeep Cherokees. From a buyer's perspective, a Cherokee sold by Fred looks identical to a Cherokee sold by Arnie. Despite the identical appearance, the Cherokees sold by Fred are higher quality than the Cherokees sold by Arnie. Fred requires $29,000 to recover costs, whereas Arnie only requires $25,000 to recover costs. Consumers are willing to pay $30,000 for a high quality Cherokee and $26,000 for a low quality Cherokee, but they are unable to distinguish between high and low quality cars when making the purchase. Demand is perfectly elastic for both high quality and low quality cars.

a) (5 pts) Initially consumers believe there is a 50 percent chance that the vehicle is high quality and a 50 percent chance that the vehicle is low quality. However, their beliefs will adjust based on the quality of cars sold. What is the equilibrium price in this market? What is the inefficiency in the market outcome that can be attributed to adverse selection? Explain briefly.

*With a belief of 50-50 odds, buyers would be willing to pay 0.5*30,000 + 0.5*26,000 = $28,000 for a randomly selected Cherokee. However, Fred will not sell his Cherokee at that price because the offered price is below his break-even cost of $29,000. Good quality Cherokees will disappear from the market, which is the adverse selection problem. Knowing that there are only low quality Cherokees left in the market, consumers will offer $26,000 for a Cherokee, which Arnie will accept because his cost is only $25,000. Thus, $26,000 is the equilibrium price in this market. The market outcome is inefficient because buyers value a high quality Cherokee at $30,000 and Fred can supply a high quality Cherokee at a cost of $29,000. The positive surplus of $1,000 per Cherokee is lost as a result of the adverse selection.*

Assign 1 point for recognizing that buyers are willing to pay $28,000 with a belief of 50-50 odds. Assign 1 point for recognizing that Fred will not sell for $28,000 because his costs are $29,000. Assign 1 point for indicating that the equilibrium price is $26,000 because buyers will come to believe that only low quality Cherokees are being sold and Arnie is willing to sell at this price. Assign 1 point for indicating that the market outcome is inefficient because good Cherokees are not sold in the market, even though such vehicles would be sold with perfect information. Assign 1 point for identifying that the surplus which is lost due to adverse selection is equal to $1000 per Cherokee.

b) (5 pts) To remain in the market suppose Fred offers a two-year full-service warranty in order to signal the quality of the Cherokees that he sells. The expected cost of honouring this warranty is $500 per car. If Arnie were to offer a similar warranty, the expected cost of honouring the warranty for Arnie would be $3000 per car. Would Fred offer the warranty in equilibrium? What about Arnie? (Assume that consumers are still willing to pay $30,000 for a high quality Cherokee and $26,000 for a low quality Cherokee, with or without a warranty – the warranty only serves as a signal of quality. The equilibrium should be Nash equilibrium in which consumers have correct expectations about the quality of the car each buys and in which each Arnie and Fred are each making the best choice they can given the other's choice.)

If the warranty is effective at signaling high quality, then Fred will sell Cherokees at $30,000 with the warranty and Arnie will sell Cherokees at $26,000 with no warranty. To check if this is a Nash equilibrium we must ensure that neither Fred nor Arnie wish to deviate. In the proposed equilibrium Fred's net profit per sale is 30,000 – 29,000 – 500, which is $500. Deviating implies that Fred will not offer the warranty and thus sell at $26,000, which is the proposed equilibrium price for Cherokees being sold without a warranty. This deviation is not profitable for Fred, so Fred has no incentive to deviate from the proposed equilibrium.

Next consider whether Arnie will deviate by choosing to offer a warranty. By not offering the warranty, profits for Arnie are equal to 26,000 – 25,000, which is $1000. Deviating implies offering the warranty and selling at $30,000, which is the proposed equilibrium price of Cherokees with a warranty. Deviating results in profits for Arnie equal to 30,000 – 25,000 – 3000, which is 2000. Thus, deviating is profitable for Arnie. Since Arnie has an incentive to deviate, the propose equilibrium where Fred offers the warranty and Arnie does not offer the warranty is not valid. This being the case, the signal is not effective and neither Fred nor Arnie will choose to offer the warranty.

10. (Priceline)

a) (5 pts) Fill in the blanks:

The Name Your Own Price System used by Priceline Inc is an _OPAQUE__ selling method. Buyers don't know the _IDENTITY_ of the hotel they will get until after the purchase is made. The NYOP system is also known as a _REVERSE_ auction because hotels bid for customers instead of customers bidding for hotels. According to the theory, the price discounts with respect to rates posted by hotels should be _HIGHER__ in the off-peak season (holding everything else constant). Discounts would be _HIGHER_ in cities with more participating hotels. Last, discounts should be higher when bidding for hotels of _HIGH_ quality.

1 point for each correct word up to 5 (a student with 5 or 6 correct answers gets a total of 5 points)

b) (5 pts) Choose one market where you would use the NYOP system and explain briefly why you think it would be a good idea (not more than 10 lines).

I focused on the explanation more than the example. The main idea is that the NYOP is a price discrimination mechanism that allows firms to sell their products at two different prices: the posted price and the opaque price. NYOP works better when: a) Firms have excess capacity (think of a hotel during off-peak season), b) MC explains very little of the AC (again, a hotel has low marginal cost of renting a room relative to the AC) , c) There are many firms producing products with similar quality (it will not work if there's only 1 hotel in the city, but if there are two or three the reverse auction might not be very competitive), d) you need a mass of consumers that are not willing to pay a lot to know the identity of the firm in advance.